

### **REMARKS**

Claims 1-23 are currently pending. Claims 1, 2, 6, 7, 9, 10, 14 and 15 are amended. Claims 3-5 and 11-13 are cancelled. Claims 17-23 are added. No new matter is added as a result of the above amendments. Reconsideration of the claims in light of the above amendments and the following remarks is respectfully requested.

#### **Rejection under 35 U.S.C. §112, Second Paragraph, Claims 1, 2, 6-10, and 14-16**

Claims 1, 2, 6-10, and 14-16 are rejected under 35 U.S.C. §112, second paragraph, for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

The Examiner states that “a purchasing order attribute” is indefinite in scope. By this Response, claims 1 and 9 are amended to recite “a PO attribute of the PO number”. Thus, the PO attribute corresponds to the PO number entered. Therefore, the term “PO attribute” is now definite.

In addition, the Examiner states that the term “good receiving module” is indefinite as to its properties and functions. By this Response, claims 1, 6, 9, and 14 are amended to recite a “goods receiving module” instead of a “good receiving module” to clarify that “goods receiving” is the name of the module. Therefore, the term “goods receiving module” is now definite as to its properties being a name of the module.

The Examiner further states that claims 7 and 15 are indefinite with respect to term “the method” and that the claims are confusing in that the claims are implemented using software running on computers.” By this response, claims 7 and 15 are amended to remove the confusing limitations. Accordingly, Applicants respectfully request the withdrawal of the rejection of claims 1, 2, 6-10, and 14-16 under 35 U.S.C. §112, second paragraph.

#### **Newly Added Claims, Claims 17-23**

Claim 17 is added to recite a computer readable medium having encoded a process similar to claim 1. These features are supported at least on page 3 line 5-7 of current specification, which states that a software program for paying vendors is provided by the present disclosure.

Claim 18 and 22 are added to recite “wherein said document posting checking configure module using said QI number to check QI information by checking quality inspection status of a

good received based on the QI number.” These features are supported at least on page 11, lines 5-7 and on page 14, lines 6-7.

Claims 19 and 23 are added to recite “wherein said GR-IR matching configure module matches the invoice number against a GR number by using at least one matching rule.” These features are supported at least on page 16, lines 14-16 and on page 13, lines 13-18.

Claims 20 and 23 are added to recite “wherein the QI number is a unique key number linking a good identified by the GR number to quality inspection information of the good.” These features are supported at least on page 14, lines 1-5.

### **Conclusion**

It is clear from all of the foregoing that independent claims 1, 9, and 17 are in condition for allowance. Dependent claims 2, 6-8, 10, 14-16, and 18-23 depend from and further limit independent claims 1 and 9 and therefore are allowable as well.

The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

Respectfully submitted,



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Linda Ingram

# **PAYMENT MODEL FOR AN ENTERPRISE RESOURCE PLANNING SYSTEM**

## **Background of Invention**

### **1) Field of the Invention**

This invention relates generally to a system and a method of paying vendors and more particularly to a system and a method for processing payments that is integrated with an enterprise resource planning (ERP) system and more particularly to a software program that processes payments and is integrated with an ERP system.

### **2) Description of the Prior Art**

Enterprise Resource Planning (ERP) systems are used to run many of the large companies in the work. However, many ERP systems do not have adequate integration between the modules. For example, the inventors have found that the integration and data entry and data transfer between the modules involved in Purchase orders, Receiving, Quality, and Account payable is less than optimal.

US 5,369,570(Parad) shows a resource management system.

US 5,953,707(Huang et al.) shows a decision support system that works with the resource planning system and vender management.

US 6,088,626(Lilly et al.) shows a method for scheduling orders.

US 5,089,970(Lee et al.) shows an integrated manufacturing system

US 5,787,283(Chin et al.) shows a manufacturing logistics decision support system.

US 6,005,571(Pachauri) teaches a graphical interface to a database.

This invention provides an integrated solution to payment processing.

## **Summary of the Invention**

It is an object of the present invention to provide a system and a method for paying vendors. It is an object of the present invention to provide a software program for paying vendors using a system that is integrated with an Enterprise Resource Planning (ERP) system.

It is an object of the present invention to provide a system and a method with a portion implemented using computer software running on a computer for paying vendors using a system that is integrated with an Enterprise Resource Planning (ERP) system.

To accomplish the above objectives, the present invention provides a method implemented mainly by computer software. The invention is a computer software implemented method of processing payments, comprising the following steps.

~~We~~ ~~(a A person~~ ~~[[ ]]~~) enters an invoice number and invoice amount from an invoice entry point into a invoice tracking module.

The invoice tracking module transfers a PO number to a purchasing module.

The purchasing module transfers a PO attribute to a payment configuration module.

~~We~~ ~~(a A person)~~ ~~enter~~ ~~enters~~ payment terms and the payment terms are transferred into the payment configuration module prior to the PO is released and the invoice is received.

The payment configuration module transfers a payment control key to a ~~[[good]]~~ goods receiving (GR) module.

The ~~[[good]]~~ goods receiving module transfers a GR list of the PO number to a GR-IR matching configure module.

The GR-IR matching configure module transfers a GR number to a quality management module.

The quality management module transfers a QI number to a document posting checking configure module.

The document posting checking configure module checks the QI number.

The document posting checking configure module automatically posts an accounts payable document and then transfers payment information to a ~~vender~~ vendor management module.

The ~~vender~~ vendor management module sends payment information to a vendor.

Additional objects and advantages of the invention will be set forth in the description that follows, and in part will be obvious from the description, or may be learned by practice of the invention. The objects and advantages of the invention may be realized and obtained by means of instrumentalities and combinations particularly pointed out in the append claims.

### **Brief Description of the Drawings**

The features and advantages of a semiconductor device according to the present invention and further details of a process of fabricating such a semiconductor device in accordance with the present invention will be more clearly understood from the following description taken in conjunction with the accompanying drawings in which like reference numerals designate similar or corresponding elements, regions and portions and in which:

FIG 1 is a flow chart of the payment processing system of the prior art.

FIG 2 is a flow chart of an illustration of a preferred embodiment of the payment processing system of the present invention.

FIG 3 shows a flow chart of ~~the process in~~ an illustration of a preferred embodiment of the present invention.

FIGS 4A, 4B and 4C show views of computer screens (front end graphical user interface) according to a preferred embodiment of the present invention.

## **Detailed Description of the Preferred Embodiments**

### **A. Problem Invention solves**

Referring now to the drawings and more particularly to Fig 1, there is shown an ERP system over which the present invention is an improvement. It is to be understood in this regard that no portion of Fig 1 is admitted to be prior art as the present invention. Rather, this highly simplified diagram is an effort to provide an improved understanding of the problems that are overcome by the invention.

FIG 1 shows three modules of an ERP system. The three module are: purchasing module 202, the ~~[[good]] goods~~ receiving module 206 and the quality management module 210. However, the set-up has problems associated with processing payments.

For outgoing payment processing, vendors may send invoices to the company's several different departments (Accounting, Warehouse) , various sites (HSIP, TSIP), or directly to users. The company accountants must collect and classify the different types of invoices manually for process. It takes a long, time to find out which PO (purchase order number) or GR (goods received number ) items have not yet been cleared. Consequently, it also requires much time to ensure that the target GR (Goods receipt) has been quality inspected. Finally, accountants need to clear open GRs manually. In addition, vendors always call accounts or buyers for payment status queries. Much paperwork and manpower are required.

Disadvantages are as follows: 1) Huge manpower required[[.]], 2) Long processing time for Accounts Payable (A/P), 3) Much paperwork, and 4) Poor relationship with vendors.

### **B. Present invention**

The present invention will be described in detail with reference to the accompanying drawings. The present invention provides a system and a method of processing outgoing payments and integrating the payment system with 3 modules of an ERP system. See FIGS 2 and 3.

### **C. Overview of the invention**

The invention comprises the following.

~~We~~~~a~~ A person~~[[ ]]~~ enters an invoice number 301 and invoice amount from an invoice entry point 104 into a invoice tracking module 108.

The invoice tracking module 108 transfers a PO number 302 to a purchasing module 202.

The purchasing module 202 transfers a PO attribute 306 to a payment configuration module 112.

~~We (a person) enter~~ enters payment terms 114 and the payment terms are transferred into the payment configuration module 112 prior to the PO is released and the invoice is received.

The payment configuration module 112 transfers a payment control key 310 to a ~~[[good]]~~ goods receiving (GR) module 206.

The ~~[[good]]~~ goods receiving module 206 transfers a GR list of the PO number 314 to a GR-IR matching configure module 116.

The GR-IR matching configure module 116 transfers a GR number 320 to a quality management module 210.

The quality management module 210 transfers a QI number 324 to a document posting checking configure module 120.

The document posting checking configure module 120 checks the QI 20 number.

The document posting checking configure module 120 automatically posts an accounts payable document and then transfers payment information 328 to a ~~vender~~ vendor management module 124.

The ~~vender~~ vendor management module 124 sends payment information 332 to a vendor 130.

#### **D. Preferred embodiment**

In a preferred embodiment, the ERP system is a SAP ERP system. SAP is a ERP system made by SAP AG-Walldorf, 10 Neurottstrasse 16 69190 Waldorf Germany. The particular modules are: purchasing module (PO) 202, the ~~[[good]]~~ goods receiving module (GR) 206 and the quality management module (QM) 210.

By using several key indexes to fully integrate 15 business process flow chains, the system, after quick processing, can automatically publish payment-status to many vendors. Of course, each vendor can only receive their own information. These key indexes are: PO number, PO Attribute, payment control key, GR number, Q~~[[1]]~~ number.

Main points of the invention are as follows:

1. Provide a screen to allow front-end accountants to key in certain parameters, e.g., PO number, invoice number and amount.
2. Auto-Classify invoice types based on PO attributes and payment term.
3. Dynamically search open GR numbers based on the entered PO number and amount
4. Link to the Quality Management System to check quality inspection status of the GR number.
5. If the target GR number has been quality inspected, then auto post A/P vouchers.
6. Automatically ~~e-mail~~ email payment status to vendors and enable vendors to on-line query payment status through a company website.

A preferred embodiment of the invention's method of processing payments is described below.

**E. FIG 2 - Payment system**

Figure 2 includes the following elements:

302- PO number

306 - PO attribute, e.g., GR flag

310 – Payment control key, PO number

314 - GR list of PO numbers

320 - GR number

324 - QI number, Quality Accept Quantity

As shown in FIG 2, an invoice number 301 and invoice amount are entered from an invoice entry point 104 into a invoice tracking module 108.

The invoice tracking module keeps the invoices processing statuses. The invoice tracking module includes some tables to keep their detail information (e.g., invoice number, 10 PO number, currency amount, vendors code, tax amount, status, GR umber, GR item.

The invoice tracking module 108 transfers a PO 15 number 302 to a purchasing module 202.

The purchasing module 202 transfers a PO attribute 306 to a payment configuration module 112.

Next, when the company buyers have agreed on a new payment terms with the vendors, the payment terms 114 are 20 entered into the payment configuration module 112. An example of payment terms is: (PU05) 90% 1 month after delivery, 10% 1 month after user accept. The payment terms can be entered before the PO is created.

The payment configuration module defines the payment procedure, (when, how many % of total amount and by what payment method (down payment/ LC,... ) to pay the vendor).

The payment configuration module 112 transfers a payment control key 310 to a [[good]] goods receiving (GR) module 206.

The [[good]] goods receiving module 206 transfers a GR list of the PO number 314 to a GR-IR matching configure module 116.

Normally, an ERP system has the PO & GR modules inside. The GR module keeps every good receipt number and their 10 detail information for every PO number. So, GR list is the history information of certain PO number.

The GR-IR matching configure module 116 transfers a GR number 320 to a quality management module 210. The GR-IR matching configure module 116 matches the invoice number ~~and fits against the~~ GR number by some matching rules, e.g., currency, amount tolerance and then transfers [[it]] the GR number to the quality management module 210.

The quality management module 210 transfers a QI number 324 to a document posting checking configure module 120.

Quality inspection (QI) number 324 is created when a QI staff finishes the inspection of the good in ERP system. It is a serious, unique key number to link to inspection information, e.g., total QC quantity, acceptance quantity, rejection quantity, scrapped quantity etc.

The document posting checking configure module 120 uses the QI number to check the QI status. If the QI status is Ok, Then the document posting checking configure module 120 posts an A/P (accounts payable) document automatically.

The document posting checking configure module 120 transfers payment information 328 to a ~~vender~~ vendor management module 124.

The ~~vender~~ vendor management module 124 sends payment information to a vendor 130 preferably by e-mail or through the company website.

#### **F. FIG 3 - Business flow using the system of the invention.**

FIG 3 shows an example of the logistical flow from the vendor shipping an order to the vender being paid. The steps shown are performed by the computer program of the invention.

First, the vendor ships the good 101. The accounting ~~personal-key~~ personnel keys in the PO, invoice number and the amount (See box 104).

The invention does the processing in box 100.

1) (304) the system/program auto matches the GR item or the PO items 116. Referring to FIG 3, this is performed in the invention's GR-IR matching configure module 116.

2) (308) auto-checks the Quality control (QC) results 120. Referring to FIG 3, this is performed in the invention's Document posting checking configuration module 120.

3) auto posts the documents 120 - Referring to FIG 3, this is performed in the invention's Document posting checking configuration module 120.

4) auto transfer payment status information (e.g., email) to vendor 124. Referring to FIG 3, this is performed in the invention's Vendor management module 124.

The vendor receives the payment status information 130.

#### **G. Front end graphical user interface**

FIGS 4A, 4B and 4C show examples of the front end GUI (graphical user interface).

Screen 402 (FIG 4A) is the first front-end screen which allows accountants to enter invoice number, PO number and amount. Behind the screen, the system uses the PO number to link to PO module to get PO attributes.



Screen 404 (FIG 4B) is second front-end screen that 10 shows the results of the inventions' auto-classification of invoice (e.g, stock on equipment, building, etc.) .

Screen 406 (FIG 4C) is the third front end screen shows one click posting. This is the kernel function of the system. It includes several tasks inside. It [[gets]] retrieves the GR list 15 and then matches the invoice number with a fit against a GR number. Also, it [[gets]] retrieves the QI number by the [[fit]] GR number, [[gets]] retrieves QI information by the QI number. End users (accountants) can preview the matching results, then just push the "post all" button to post all A/P documents.

Screen 406 shows the following results 1) Auto search GR: 2) Auto check quality control and 3) Auto post voucher.

## **II. Benefits of the invention**

The "Payment model of ERP" is a new and very powerful methodology in the ERP system. It leverages several indexes to integrate enterprise process flow chains all the way from purchasing to receiving goods, quality Inspection, payment audits and outgoing payments. ERP systems which apply this model can greatly reduce manpower and cycle time and strengthen relationship with vendors.

By easily entering simple data in the front-end, the system can auto-classify invoices, auto-classify invoices, search GRs, auto-check QC status, auto-post documents, automatically e-mail payment status to vendors etc., . All of these are the main inventions of the ERP system.

The invention improves over the existing ERP (e.g., SAP) system by:

- 1 Auto-classify Invoice types (foreign/local; stock/expense/building/equipment...)
2. Auto-search appropriate target GR number.
3. Auto-check quality inspection status for GR numbers.
4. Auto-post A/P vouchers.
5. Auto-Email payment status to vendors

We have applied this model to the TSMC ERP system since 07/01/1999. It has reduced manpower over 90%, and strengthen the relationship with vendors. It has proved to be a very reliable and valuable model.

While the invention has been particularly shown and described with reference to the preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made without departing from the spirit and scope of the invention. It is intended to cover various modifications and similar arrangements and procedures, and the scope of the appended claims therefore should be accorded the broadest interpretation so as to encompass all such modifications and similar arrangements and procedures.

### Abstract

A system and a computer software implemented method of processing payments comprising the following steps. ~~We enter~~ A person enters a PO number, an invoice number and invoice amount from an invoice entry point into an invoice tracking module. The invoice tracking module transfers a PO number to a purchasing module. The purchasing module transfers a PO attribute to a payment configuration module. The payment configuration module transfers a payment control key to a ~~[[good]]~~ goods receiving (GR) module. The ~~[[good]]~~ goods receiving module transfers a GR list of the PO number to a GR-IR matching configure module. The GR-IR matching configure module transfers a GR number to a quality management module. The quality management module transfers a QI number to a document posting checking configure module. The document posting checking configure module checks the QI number. The document posting checking configure module transfers payment information to a ~~vender~~ vendor management module. The ~~vender~~ vendor management module initiates a payment to a vendor. The ~~vender~~ vendor management module sends payment information to a vendor.

# **PAYMENT MODEL FOR AN ENTERPRISE RESOURCE PLANNING SYSTEM**

## **Background of Invention**

### **1) Field of the Invention**

This invention relates generally to a system and a method of paying vendors and more particularly to a system and a method for processing payments that is integrated with an enterprise resource planning (ERP) system and more particularly to a software program that processes payments and is integrated with an ERP system.

### **2) Description of the Prior Art**

Enterprise Resource Planning (ERP) systems are used to run many of the large companies in the work. However, many ERP systems do not have adequate integration between the modules. For example, the inventors have found that the integration and data entry and data transfer between the modules involved in Purchase orders, Receiving, Quality, and Account payable is less than optimal.

US 5,369,570(Parad) shows a resource management system.

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This invention provides an integrated solution to payment processing.

## **Summary of the Invention**

It is an object of the present invention to provide a system and a method for paying vendors. It is an object of the present invention to provide a software program for paying vendors using a system that is integrated with an Enterprise Resource Planning (ERP) system.

It is an object of the present invention to provide a system and a method with a portion implemented using computer software running on a computer for paying vendors using a system that is integrated with an Enterprise Resource Planning (ERP) system.

To accomplish the above objectives, the present invention provides a method implemented mainly by computer software. The invention is a computer software implemented method of processing payments, comprising the following steps.

A person enters an invoice number and invoice amount from an invoice entry point into a invoice tracking module.

The invoice tracking module transfers a PO number to a purchasing module.

The purchasing module transfers a PO attribute to a payment configuration module.

A person enters payment terms and the payment terms are transferred into the payment configuration module prior to the PO is released and the invoice is received.

The payment configuration module transfers a payment control key to a goods receiving (GR) module.

The goods receiving module transfers a GR list of the PO number to a GR-IR matching configure module.

The GR-IR matching configure module transfers a GR number to a quality management module.

The quality management module transfers a QI number to a document posting checking configure module.

The document posting checking configure module checks the QI number.

The document posting checking configure module automatically posts an accounts payable document and then transfers payment information to a vendor management module.

The vendor management module sends payment information to a vendor.

Additional objects and advantages of the invention will be set forth in the description that follows, and in part will be obvious from the description, or may be learned by practice of the invention. The objects and advantages of the invention may be realized and obtained by means of instrumentalities and combinations particularly pointed out in the append claims.

### **Brief Description of the Drawings**

The features and advantages of a semiconductor device according to the present invention and further details of a process of fabricating such a semiconductor device in accordance with the present invention will be more clearly understood from the following description taken in conjunction with the accompanying drawings in which like reference numerals designate similar or corresponding elements, regions and portions and in which:

FIG 1 is a flow chart of the payment processing system of the prior art.

FIG 2 is a flow chart of an illustration of a preferred embodiment of the payment processing system of the present invention.

FIG 3 shows a flow chart of an illustration of a preferred embodiment of the present invention.

FIGS 4A, 4B and 4C show views of computer screens (front end graphical user interface) according to a preferred embodiment of the present invention.

## **Detailed Description of the Preferred Embodiments**

### **A. Problem Invention solves**

Referring now to the drawings and more particularly to Fig 1, there is shown an ERP system over which the present invention is an improvement. It is to be understood in this regard that no portion of Fig 1 is admitted to be prior art as the present invention. Rather, this highly simplified diagram is an effort to provide an improved understanding of the problems that are overcome by the invention.

FIG 1 shows three modules of an ERP system. The three modules are: purchasing module 202, the goods receiving module 206 and the quality management module 210. However, the set-up has problems associated with processing payments.

For outgoing payment processing, vendors may send invoices to the company's several different departments (Accounting, Warehouse), various sites (HSIP, TSIP), or directly to users. The company accountants must collect and classify the different types of invoices manually for process. It takes a long time to find out which PO (purchase order number) or GR (goods received number) items have not yet been cleared. Consequently, it also requires much time to ensure that the target GR (Goods receipt) has been quality inspected. Finally, accountants need to clear open GRs manually. In addition, vendors always call accountants or buyers for payment status queries. Much paperwork and manpower are required.

Disadvantages are as follows: 1) Huge manpower required, 2) Long processing time for Accounts Payable (A/P), 3) Much paperwork, and 4) Poor relationship with vendors.

### **B. Present invention**

The present invention will be described in detail with reference to the accompanying drawings. The present invention provides a system and a method of processing outgoing payments and integrating the payment system with 3 modules of an ERP system. See FIGS 2 and 3.

### **C. Overview of the invention**

The invention comprises the following.

A person enters an invoice number 301 and invoice amount from an invoice entry point 104 into an invoice tracking module 108.

The invoice tracking module 108 transfers a PO number 302 to a purchasing module 202.

The purchasing module 202 transfers a PO attribute 306 to a payment configuration module 112.

A person enters payment terms 114 and the payment terms are transferred into the payment configuration module 112 prior to the PO being released and the invoice received.

The payment configuration module 112 transfers a payment control key 310 to a goods receiving (GR) module 206.

The goods receiving module 206 transfers a GR list of the PO number 314 to a GR-IR matching configure module 116.

The GR-IR matching configure module 116 transfers a GR number 320 to a quality management module 210.

The quality management module 210 transfers a QI number 324 to a document posting checking configure module 120.

The document posting checking configure module 120 checks the QI 20 number.

The document posting checking configure module 120 automatically posts an accounts payable document and then transfers payment information 328 to a vendor management module 124.

The vendor management module 124 sends payment information 332 to a vendor 130.

#### **D. Preferred embodiment**

In a preferred embodiment, the ERP system is a SAP ERP system. SAP is a ERP system made by SAP AG-Walldorf, 10 Neurtstasse 16 69190 Waldorf Germany. The particular modules are: purchasing module (PO) 202, the goods receiving module (GR) 206 and the quality management module (QM) 210.

By using several key indexes to fully integrate 15 business process flow chains, the system, after quick processing, can automatically publish payment-status to many vendors. Of course, each vendor can only receive their own information. These key indexes are: PO number, PO Attribute, payment control key, GR number, QI number.

Main points of the invention are as follows:

1. Provide a screen to allow front-end accountants to key in certain parameters, e.g., PO number, invoice number and amount.
2. Auto-Classify invoice types based on PO attributes and payment term.
3. Dynamically search open GR numbers based on the entered PO number and amount
4. Link to the Quality Management System to check quality inspection status of the GR number.
5. If the target GR number has been quality inspected, then auto post A/P vouchers.
6. Automatically email payment status to vendors and enable vendors to on-line query payment status through a company website.

A preferred embodiment of the invention's method of processing payments is described below.

#### **E. FIG 2 - Payment system**

Figure 2 includes the following elements:

302- PO number

306 - PO attribute, e.g., GR flag

310 – Payment control key, PO number

314 - GR list of PO numbers

320 - GR number

324 - QI number, Quality Accept Quantity

As shown in FIG 2, an invoice number 301 and invoice amount are entered from an invoice entry point 104 into an invoice tracking module 108.

The invoice tracking module keeps the invoices processing statuses. The invoice tracking module includes some tables to keep their detail information (e.g., invoice number, 10 PO number, currency amount, vendors code, tax amount, status, GR umber, GR item).

The invoice tracking module 108 transfers a PO 15 number 302 to a purchasing module 202.

The purchasing module 202 transfers a PO attribute 306 to a payment configuration module 112.

Next, when the company buyers have agreed on a new payment terms with the vendors, the payment terms 114 are 20 entered into the payment configuration module 112. An example of payment terms is: (PU05) 90% 1 month after delivery, 10% 1 month after user accept. The payment terms can be entered before the PO is created.

The payment configuration module defines the payment procedure, (when, how many % of total amount and by what payment method (down payment/ LC,...) to pay the vendor).

The payment configuration module 112 transfers a payment control key 310 to a goods receiving (GR) module 206.

The goods receiving module 206 transfers a GR list of the PO number 314 to a GR-IR matching configure module 116.

Normally, an ERP system has the PO & GR modules inside. The GR module keeps every good receipt number and their 10 detail information for every PO number. So, GR list is the history information of certain PO number.

The GR-IR matching configure module 116 transfers a GR number 320 to a quality management module 210. The GR-IR matching configure module 116 matches the invoice number against the GR number by some matching rules, e.g., currency, amount tolerance and then transfers the GR number to the quality management module 210.

The quality management module 210 transfers a QI number 324 to a document posting checking configure module 120.

Quality inspection (QI) number 324 is created when a QI staff finishes the inspection of the good in ERP system. It is a serious, unique key number to link to inspection information, e.g., total QC quantity, acceptance quantity, rejection quantity, scrapped quantity etc.

The document posting checking configure module 120 uses the QI number to check the QI status. If the QI status is Ok, Then the document posting checking configure module 120 posts an A/P (accounts payable) document automatically.

The document posting checking configure module 120 transfers payment information 328 to a vendor management module 124.

The vendor management module 124 sends payment information to a vendor 130 preferably by e-mail or through the company website.

#### **F. FIG 3 - Business flow using the system of the invention.**

FIG 3 shows an example of the logistical flow from the vendor shipping an order to the vender being paid. The steps shown are performed by the computer program of the invention.

First, the vendor ships the good 101. The accounting personnel keys in the PO, invoice number and the amount (See box 104).

The invention does the processing in box 100.

1) (304) the system/program auto matches the GR item or the PO items 116. Referring to FIG 3, this is performed in the invention's GR-IR matching configure module 116.

2) (308) auto-checks the Quality control (QC) results 120. Referring to FIG 3, this is performed in the invention's Document posting checking configuration module 120.

3) auto posts the documents 120 - Referring to FIG 3, this is performed in the invention's Document posting checking configuration module 120.

4) auto transfer payment status information (e.g., email) to vendor 124. Referring to FIG 3, this is performed in the invention's Vendor management module 124.

The vendor receives the payment status information 130.

#### **G. Front end graphical user interface**

FIGS 4A, 4B and 4C show examples of the front end GUI (graphical user interface).

Screen 402 (FIG 4A) is the first front-end screen which allows accountants to enter invoice number, PO number and amount. Behind the screen, the system uses the PO number to link to PO module to get PO attributes.

Screen 404 (FIG 4B) is second front-end screen that 10 shows the results of the inventions' auto-classification of invoice (e.g, stock on equipment, building, etc.) .



Screen 406 (FIG 4C) is the third front end screen shows one click posting. This is the kernel function of the system. It includes several tasks inside. It retrieves the GR list 15 and then matches the invoice number against a GR number. Also, it retrieves the QI number by the GR number, retrieves QI information by the QI number. End users (accountants) can preview the matching results, then just push the "post all" button to post all A/P documents.

Screen 406 shows the following results 1) Auto search GR: 2) Auto check quality control and 3) Auto post voucher.

## **H. Benefits of the invention**

The "Payment model of ERP" is a new and very powerful methodology in the ERP system. It leverages several indexes to integrate enterprise process flow chains all the way from purchasing to receiving goods, quality inspection, payment audits and outgoing payments. ERP systems which apply this model can greatly reduce manpower and cycle time and strengthen relationship with vendors.

By easily entering simple data in the front-end, the system can auto-classify invoices, auto-classify invoices, search GRs, auto-check QC status, auto-post documents, automatically e-mail payment status to vendors etc., . All of these are the main inventions of the ERP system.

The invention improves over the existing ERP (e.g., SAP) system by:

- 1 Auto-classify Invoice types (foreign/local; stock/expense/building/equipment...)
2. Auto-search appropriate target GR number.
3. Auto-check quality inspection status for GR numbers.
4. Auto-post A/P vouchers.
5. Auto-Email payment status to vendors

We have applied this model to the TSMC ERP system since 07/01/1999. It has reduced manpower over 90%, and strengthen the relationship with vendors. It has proved to be a very reliable and valuable model.

While the invention has been particularly shown and described with reference to the preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made without departing from the spirit and scope of the invention. It is intended to cover various modifications and similar arrangements and procedures, and the scope of the appended claims therefore should be accorded the broadest interpretation so as to encompass all such modifications and similar arrangements and procedures.

### **Abstract**

A system and a computer software implemented method of processing payments comprising the following steps. A person enters a PO number, an invoice number and invoice amount from an invoice entry point into an invoice tracking module. The invoice tracking module transfers a PO number to a purchasing module. The purchasing module transfers a PO attribute to a payment configuration module. The payment configuration module transfers a payment control key to a goods receiving (GR) module. The goods receiving module transfers a GR list of the PO number to a GR-IR matching configure module. The GR-IR matching configure module transfers a GR number to a quality management module. The quality management module transfers a QI number to a document posting checking configure module. The document posting checking configure module checks the QI number. The document posting checking configure module transfers payment information to a vendor management module. The vendor management module initiates a payment to a vendor. The vendor management module sends payment information to a vendor.